

CAN Interface Module for MPL PIP Platforms

The PIPCAN is an interface module fitting into MPL PIP computers. It adds a CAN 2.0B controller which is accessible in the I/O space of the CPU address range. Several assembly options enable optimization of space usage within the PIP housing or even integration of the module into non-PC controller hardware.

- **Features:**

- Supports CAN 2.0B
- Bit rates up to 1 Mbit
- CAN Bus with full galvanic isolation
- Single 5V supply
- Does not require an additional external power supply

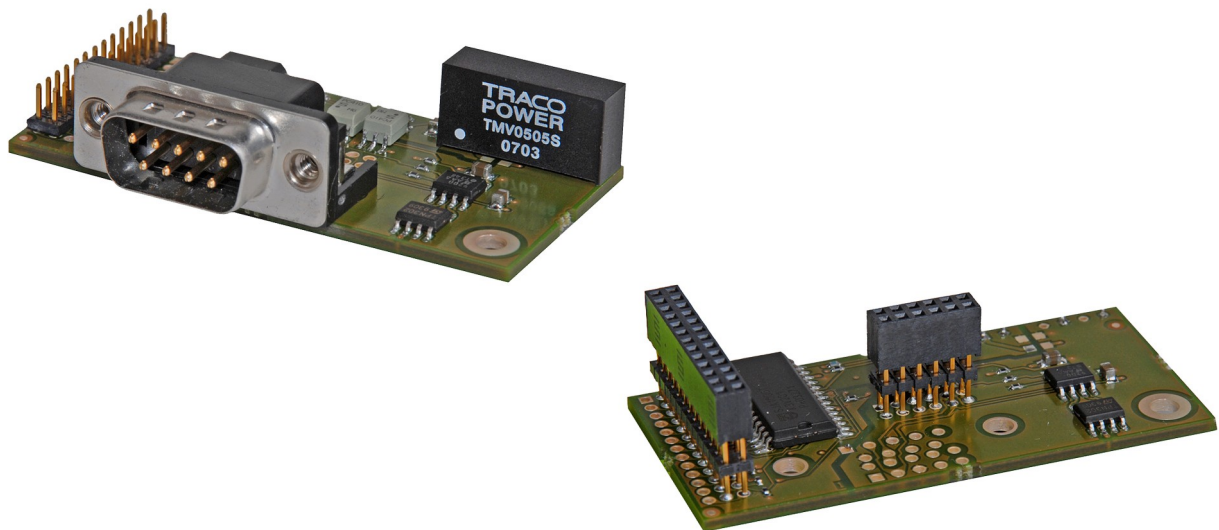


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1 INTRODUCTION

1.1 ABOUT THIS MANUAL

This manual, the PIPCAN User Manual provides all the information necessary to handle and configure the PIPCAN.

The manual is written for technical personnel responsible for integrating the PIPCAN into their systems.

It is strongly recommended to read this manual and related documentation to bring the PIPCAN successfully into operation.

1.2 SAFTY PRECAUTIONS AND HANDLING

For personal safety and safe operation of the PIPCAN, follow all safety procedures described here and in other sections of the miscellaneous manuals.

- Remove power from the system before installing (or removing) the PIPCAN, to prevent the possibility of personal injury (electrical shock) and / or damage to the product.
- Handle the product carefully; i.e. dropping or mishandling the PIPCAN can cause damage to assemblies and components.
- Do not expose the equipment to moisture.

WARNING

There are no user-serviceable components on the PIPCAN.

1.3 ELECTROSTATIC DISCHARGE (ESD) PROTECTION

Various electrical components within the product are sensitive to static and electrostatic discharge (ESD). Even a small static discharge can be sufficient to destroy or degrade a component's operation!

With an open housing, do not touch any electronic components. Handle or touch only the unit chassis.

1.4 EQUIPMENT SAFETY

Great care is taken by MPL AG that all its products are thoroughly and rigorously tested before leaving the factory to ensure that they are fully operational and conform to specification. However, no matter how reliable a product, there is always the remote possibility that a defect may occur. The occurrence of a defect on this device may, under certain conditions, cause a defect to occur in adjoining and/or connected equipment. It is your responsibility to protect such equipment when installing this device. MPL accepts no responsibility whatsoever for such defects, however caused.

1.5 MANUAL REVISIONS

1.5.1 RELATED PRODUCTS

Manual Revisions	Related To
A	• PIPCAN-1/2/3/4 based on Layout Rev. B
B	•

1.5.2 REVISION HISTORY

Manual Revisions	Date	Description
A	28.04.09	Initial release of this document.
B		

1.6 RELATED DOCUMENTATION

The following documents are related to this manual. For detailed Information about a specific PIPCAN feature or setting please refer to these additional manuals.

Reference	Description	Available from
[1]	Pip BIOS User Manual	MPL AG: www.mpl.ch
[2]	PIP Technical Reference Manual	MPL AG: www.mpl.ch
[3]	SJA1000 Documentation	NXP semiconductors: www.nxp.com

1.7 ORDERING INFORMATION

The table below gives you an overview of the different PIPCAN variants and its features.

Product Name	Product Features
PIPCAN-1	- Fully integrated with CAN Port on PIP Serial 2 Connector - Galvanic isolation
PIPCAN-2	- Freely placeable with CAN Port on an additional DB9 Connector - Galvanic isolation
PIPCAN-3	Product not on Stock, only on request - Integrated with CAN Port on a 10 Pin 0.100" double row Header - Galvanic isolation
PIPCAN-4	Product not on Stock, only on request - Fully integrated with CAN Port on an additional DB9 Connector - Galvanic isolation

2 SPECIFICATIONS

2.1 Electrical

- Supports all features of the SJA1000 controller
- CAN 2.0B
- Extended receive buffer of 64 Byte
- Supports 11 bit as well as 29 bit identifiers
- PeliCAN mode extensions
- Bit rate up to 1 Mbit/s
- CAN bus optically isolated from controller

2.2 Physical

- Dimensions 61 x 29.2 mm
- Top side height max.:

PIPCAN-1/2/4	12 mm
PIPCAN-3	10 mm
- Bottom side height max.:

PIPCAN-1	5 mm
PIPCAN-3/4	12 mm
PIPCAN-2	3 mm
- Single 5V supply

2.3 Environmental

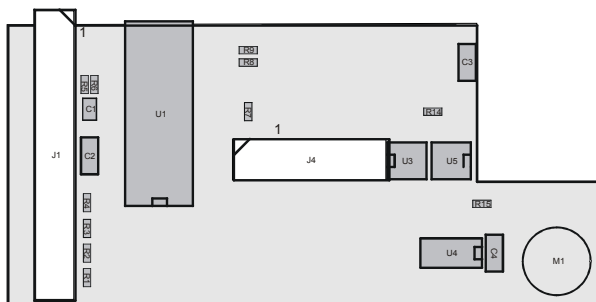
- Storage temperature range -55°C to 125°C
- Operating ambient temperature range -40°C to +85°C
- Relative humidity 0% to 95% (non condensing)

2.4 Mounting options

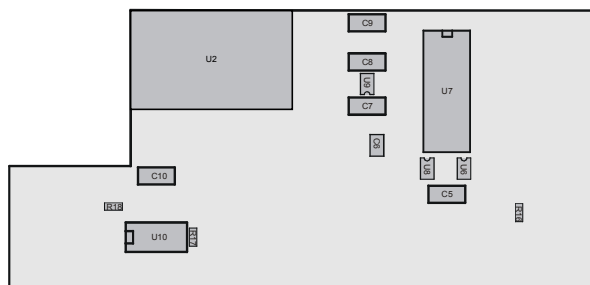
- PIPCAN-1
directly pluggable to PIP internal CAN extension and Serif-module connectors
CAN port accessible at DB9 Serial 2 connector
- PIPCAN-2
pluggable to PIP internal CAN connector via a flat ribbon cable
CAN port accessible at an additional DB9 connector
- PIPCAN-3
directly pluggable to PIP internal CAN extension connector
CAN port accessible at an internal 10 pin header
- PIPCAN-4
directly pluggable to PIP internal CAN extension connector
CAN port accessible at an additional DB9 connector above Serial 3

3 PARTS LOCATION

3.1 PIPCAN-1



Top Layer Components

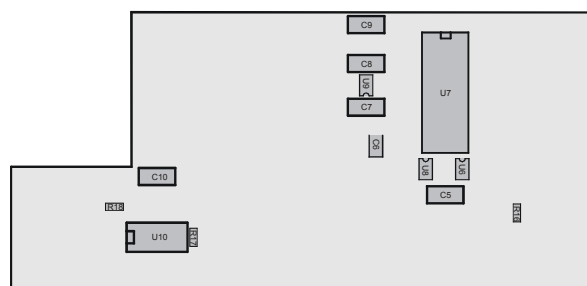


Bottom Layer Components

3.2 PIPCAN-2



Top Layer Components

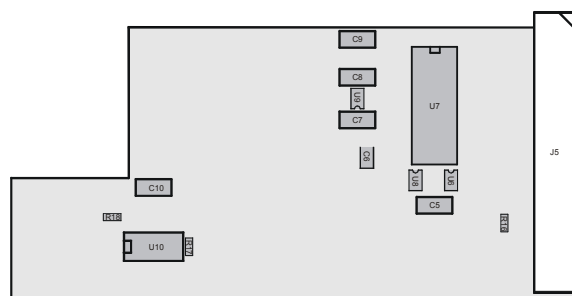


Bottom Layer Components

3.3 PIPCAN-3



Top Layer Components

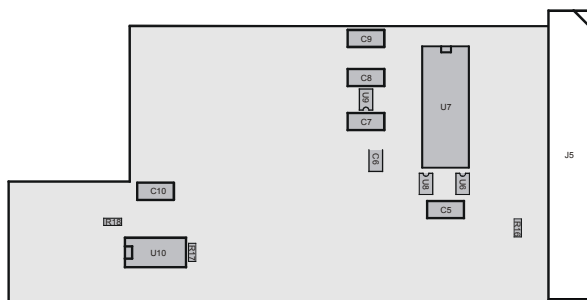


Bottom Layer Components

3.4 PIPCAN-4



Top Layer Components

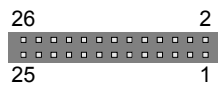
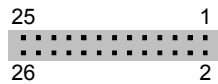


Bottom Layer Components

4 CONNECTORS

4.1 CPU-Bus Connectors (J1 / J5)

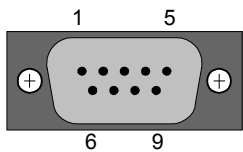
The SJA1000 on board the PIPCAN operates in “Motorola-Mode”. ALE is directly connected to J1/J5 Pin 20 (CSn). Multiplexing / Demultiplexing of address and data is done on the PIPCAN.

Pin no.	Signal	Description	J1 / J5
1	5V	Power Supply	J1 (PIPCAN-1) and J5 (PIPCAN-3/4; J5 assembled on Bottom Layer) are standard double row, 2 mm pitch sockets with following pin out: 
2	GND	Supply Ground	
3	D0	SJA1000 Data Bus	
4	D1		
5	D2		
6	D3		
7	D4		
8	D5		
9	D6		
10	D7		
11	A0	SJA1000 Address Bus	J5 (PIPCAN-2) assembled on Top Layer is a standard double row, 2 mm pitch header with the following pin out: 
12	A1		
13	A2		
14	A3		
15	A4		
16	A5		
17	A6		
18	A7		
19	R/Wn	Read / Write# (low active)	
20	CSn	Chip Select# (low active)	
21	RSTn	Reset# (low active)	
22	CLK	8 MHz System Clock	
23	IRQn	Interrupt Request# (low active)	
24	E	Enable	
25	NC	Not Connected	
26	NC	Not Connected	

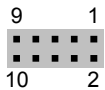
4.2 CAN Bus Connectors

The CAN-Bus can be accessed via three different connectors depending the assembly variant of the PIPCAN

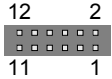
4.2.1 D-Sub 9 (J2)

Pin no.	Signal	Description	J2
1	NC	Not Connected	J2 (PIPCAN-2/4) is a standard 9 Pin male D-Sub connector with the following pin out: 
2	CAN-L	CAN-Bus Low	
3	CAN-GND	CAN Ground	
4	NC	Not Connected	
5	Case	Earth (Connector Shell)	
6	CAN-GND	CAN Ground	
7	CAN-H	CAN-Bus High	
8	NC	Not Connected	
9	NC	Not Connected	

4.2.2 2.54 mm Double Row Header J3

Pin no.	Signal	Description	J3
1	NC	Not Connected	J3 (PIPCAN-3) is a standard 10 Pin 2.54 mm header with the following pin out:  (A flat ribbon connection to a DB9 connector with Pin 1 matching Pin 1 of the DB9 results in the same pin out as J2)
2	CAN-GND	CAN Ground	
3	CAN-L	CAN-Bus Low	
4	CAN-H	CAN-Bus High	
5	CAN-GND	CAN Ground	
6	NC	Not Connected	
7	NC	Not Connected	
8	NC	Not Connected	
9	Case	Earth	
10	Case	Earth	

4.2.3 2 mm Double Row Socket J4

Pin no.	Signal	Description	J4
1	Case	Earth	J4 (PIPCAN-1) is a standard 12 Pin 2 mm socket with the following pin out:  (PIPCAN-1 plugged on a SERIF-Module connector of a PIP results in the same pin out on the serial DB9 connector of the PIP as J2 on PIPCAN)
2	Case	Earth	
3	NC	Not Connected	
4	Case	Earth	
5	NC	Not Connected	
6	NC	Not Connected	
7	NC	Not Connected	
8	CAN-GND	CAN Ground	
9	CAN-H	CAN-Bus High	
10	CAN-L	CAN-Bus Low	
11	CAN-GND	CAN Ground	
12	NC	Not Connected	

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5 COPYRIGHT

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6 DISCLAIMER

MPL AG has fully tested the PIPCAN and reviewed the documentation. However, MPL AG makes no warranty or representation, either expressed, or implied, with respect to this product, its quality, performance, merchantability, or fitness for a particular purpose.

In no event will MPL AG be liable for direct, indirect, special, incidental, or consequential damages resulting from any defect in the product or its documentation, even if advised of the possibility of such damages. In particular MPL AG shall have no liability for any parts connected to this product.

MPL AG reserves the right to make changes to any product herein to improve reliability, function or design.

7 TRADEMARKS

Brand or product names are trademarks and registered trademarks of their respective holders.

8 SUPPORT

8.1 SERIAL NUMBER AND REVISION

For support it is needed that you know the product name, the product variant and the serial number of your PIPCAN. Additionally it is helpful to have the respective information of the used Processor Board and it's BIOS ready.

8.2 CONTACT MPL AG

In case of general information questions please feel free to contact us at our homepage (www.mpl.ch) or per email (info@mpl.ch).

In case of sales information questions please send an email to sales@mpl.ch.

If you have a technical problem with a PIPCAN, please first read all the related documentation and the FAQ's on our homepage carefully. If you can't solve the problem on your own feel free to contact us for technical support per email at support@mpl.ch.

Our local Distributor: